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(54) **Multiple low pressure distributor for underwater breathing apparatus**
Mehrfachniederdruckverteiler für Tauchatmungsgerät
Distributeur multiple de basse pression pour appareil respiratoire sous-marine

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(56) References cited:
US-A- 4 137 585 **US-A- 5 293 864**

- **"Scuba Life Jacket Safeguards Downed Pilot"**
MACHINE DESIGN, vol. 37, no. 26, 19 August
1965, page 26 XP002068910

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Description

[0001] The present invention refers to a multiple distributor for low-pressure uses, forming part of the equipment of a scuba diver equipped with a self-contained breathing apparatus.

[0002] The equipment of a scuba diver equipped with self-contained breathing apparatus normally consists, among other things, of a diving suit, a balancing jacket, and a single or double cylinder set, as a source of breathable air.

[0003] In turn, this air source comprises a first-stage pressure reducer of the cylinder, from which there proceed a whole series of pipes which are connected to the balancing jacket, for their inflation, to the second-stage pressure regulator, and to a second-stage emergency pressure regulator, and in the case of a water-tight diving suit, also to the air space in the suit itself. Besides being an hindrance to freedom of movement of the diver, all these pipes also constitute a danger, in that they may easily get entangled in various obstacles. In addition, the various controls for inflating and deflating the different elements served by the said pipes are not always easy and convenient to reach.

[0004] In document US-A-4137585 are provided two different solution to overcome the problem of the inflation of a buoyancy compensator: the first solution comprises a low pressure filling fixture attached to a hose that is in turn connected to the low pressure side of a first stage regulator. That is to say, the inflator is provided with its individual hose connected to the first stage regulator, thus increasing the bulk around the body of the diver, and therefore decreasing his comfort and his safety. The second solution comprises a manifold connected to a low pressure line; the said manifold is "connected by two outlet respectively to the front and back bladders through the respective ports. The switching manifold is also connected by means of a hose to the combination second stage regulator.

[0005] In this case, as explained in the description of the cited document, the gas exhausted by the diver is used for inflating the bladders. Alternatively, pushing a control button of a valve placed in the combination second stage regulator, the low pressure air can be diverted to the bladders.

[0006] The aim of the invention is to simplify the existing structures, by centralizing all the controls in a position very easy to reach, thus eliminating most of the pipes that branch off from the first stage.

[0007] According to the invention, this aim is achieved providing a multiple distributor for low-pressure uses forming part of the equipment of a scuba diver equipped with a self-contained breathing apparatus, comprising a distributor body connected by means of a single pipe to the first-stage pressure reducer of one or more cylinders, the said body being connected via one or more connectors to the individual items of use, characterised in that the said body is connected with the following: a

second-stage pressure reducer for an emergency mouthpiece, a second-stage pressure reducer connected to the divers mouthpiece, and the inflation connection of a balancing jacket, the air inlet to the latter connection being controlled via an appropriate cut off valve operated by a push-button mounted on the distributor body.

[0008] The invention will now be described in greater detail with reference to the single attached drawing, which illustrates a preferred embodiment of the device according to the invention.

[0009] As illustrated in the drawing, the said distributor comprises one body 1 connected to the first-stage pressure reducer 102 of the cylinder 2 by means of the single pipe 202, which may be either fastened to or incorporated in the balancing jacket. This body 1, which in the case illustrated is a cylindrical body, presents a series of connections, which in the example shown are:

- one connection 103 to the balancing jacket 3 which is controlled by a valve that can be operated by means of a push-button 203 set on the distributor itself;
- one connection 104 for the pipe that takes to the second-stage emergency regulator 4;
- one connection 105 for the pipe that takes to the second-stage regulator 5, i.e., the regulator connected to the diver=s mouthpiece.

[0010] Eventually, in the case of water-tight suits, this body 1 may also be provided with a connection 106 for a pipe that takes directly to the suit 6.

[0011] In addition, the said body 1 may also be provided with a push-button 303 for controlling a valve for deflating the balancing jacket.

[0012] Obviously, the number of connections that start from the distributor 1, as well as the number of control push-buttons installed on the distributor, may vary according to the needs.

Claims

1. Multiple distributor for low-pressure uses forming part of the equipment of a scuba diver equipped with a self-contained breathing apparatus, comprising a distributor body (1) connected by means of a single pipe (202) to the first-stage pressure reducer (102) of one or more cylinders (2), the said body (1) being connected via one or more connectors (104, 105, 103) to the individual items of use, characterised in that the said body (1) is connected with the following: a second-stage pressure reducer (4) for an emergency mouthpiece, a second-stage pressure reducer (5) connected to the divers mouthpiece, and the inflation connection of a balancing jacket (3), the air inlet to the latter connection being controlled via an appropriate cut off valve operated by

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a push-button (203) mounted on the distributor body.

- 2. Multiple distributor as claimed in Claim 1, **characterised in that** the said distributor may also be provided with a connection (106) for a pipe that takes directly to a water-tight diving suit (6).
- 3. Multiple distributor as claimed in Claims 1 or 2, **characterised in that** it may be provided with a push-button (303) for operating means for deflating the jacket.
- 4. Multiple distributor as claimed in the previous claims, **characterised in that** the pipe (202) that connects the distributor with the first-stage pressure reducer may be fastened to or incorporated in the balancing jacket.
- 5. Multiple distributor as claimed in the previous claims, **characterised in that** the said distributor body (1) is located on the chest of the scuba diver.

Patentansprüche

- 1. Mehrfachniederdruckverteiler mit Bildung eines Teils der Gerätschaft eines Tauchers, die mit einem unabhängigen Atmungsgerät ausgestattet ist, mit einem Verteilerkörper (1), der mittels einer einzigen Rohrleitung (202) mit dem Primär-Druckminderer (102) eines oder mehrerer Zylinder (2) verbunden ist, wobei der Körper (1) über einen oder mehrere Verbinder (104, 105, 103) mit den einzelnen Benutzungsgegenständen verbunden ist, **dadurch gekennzeichnet, daß** der Körper (1) mit dem folgenden verbunden ist: einem Sekundär-Druckminderer (4) für ein Notmundstück, einem Sekundär-Druckminderer (5), welcher mit dem Mundstück des Tauchers verbunden ist, und die Aufblasverbindung einer Ausgleichsjacke (3), wobei der Lufteinlaß zu der letztgenannten Verbindung über ein geeignetes Absperrventil gesteuert wird, welches durch eine auf dem Verteilerkörper befestigte Drucktaste (203) betätigt wird.
- 2. Mehrfachverteiler nach Anspruch 1, **dadurch gekennzeichnet, daß** der Verteiler auch mit einer Verbindung (106) für Rohr versehen sein kann, welches direkt zu einem wasserdichten Taucheranzug (6) führt.
- 3. Mehrfachverteiler nach Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** er mit einer Drucktaste (303) für die Betätigung von Mitteln für das Ablassen von Luft aus der Jacke versehen sein kann.
- 4. Mehrfachverteiler nach den vorhergehenden An-

sprüchen, **dadurch gekennzeichnet, daß** die Rohrleitung (202), welche den Verteiler mit dem Primär-Druckminderer verbindet, an der Ausgleichsjacke befestigt oder in dieser integriert sein kann.

- 5. Mehrfachverteiler nach den vorhergehenden Ansprüchen, **dadurch gekennzeichnet, daß** der Verteilerkörper (1) auf der Brust des Tauchers angeordnet ist.

Revendications

- 1. Distributeur multiple pour des utilisations à basse pression faisant partie de l'équipement d'un plongeur équipé d'un appareil respiratoire autonome, comprenant un corps de distributeur (1) communiquant au moyen d'un tuyau unique (202) avec le détendeur de premier étage (102) d'une ou plusieurs bouteilles (2), le corps (1) communiquant via un ou plusieurs raccords (104, 105, 103) avec les éléments individuels utilisés, **caractérisé en ce que le corps (1) communique avec les éléments suivants** : un détendeur de deuxième étage (4) pour un embout buccal de secours, un détendeur de deuxième étage (5) communiquant avec les divers embouts buccaux, et le raccord de gonflage d'un gilet de stabilisation (3), l'entrée d'air jusqu'à ce dernier raccord étant commandée via une vanne appropriée de fermeture de l'admission actionnée par un bouton-poussoir (203) monté sur le corps de distributeur.
- 2. Distributeur multiple selon la revendication 1, **caractérisé en ce que** le distributeur peut également être doté d'un raccord (106) pour un tuyau qui communique directement avec une combinaison de plongée étanche à l'eau (6).
- 3. Distributeur multiple selon la revendication 1 ou 2, **caractérisé en ce qu'il** peut être doté d'un bouton-poussoir (303) pour actionner un moyen pour dégonfler le gilet.
- 4. Distributeur multiple selon l'une des revendications précédentes, **caractérisé en ce que** le tuyau (202) qui met le distributeur en communication avec le détendeur de premier étage peut être fixé ou incorporé au gilet de stabilisation.
- 5. Distributeur multiple selon l'une des revendications précédentes, **caractérisé en ce que** le corps de distributeur (1) est situé sur la poitrine du plongeur.

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